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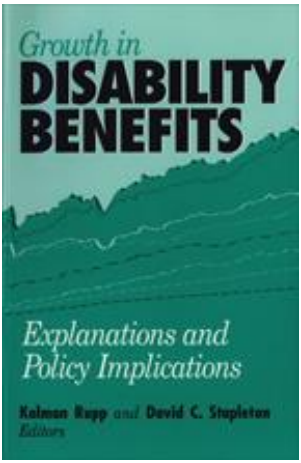

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3 The Impact of Health Care Costs and Medicaid on SSI Participation

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From 1984 to 1993, the disabled Supplemental Security Income (SSI) population grew at an annual average rate of about 9.2 percent (U.S. House of Representatives 1994). This chapter asks whether the availability of public health insurance through the Medicaid program contributed to the caseload growth. I specifically examine the effect of increasing Medicaid's value on SSI participation. I focus my analysis largely on the working-age population by examining the SSI participation behavior of adults between the ages of 18 and 64 using the Current Population Survey (CPS) data spanning the years 1987 to 1992.

Unlike the dramatic Medicaid program reforms for pregnant women and children who might otherwise be eligible for Aid to Families with Dependent Children (AFDC), and for the elderly who might otherwise be eligible for SSI, the extensions of Medicaid for the disabled during the 1980s were relatively minor.[1] Although I cannot use the type of legislative variation that has been used in other research to assess the importance of Medicaid for other populations, I will assess the impor-

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tance of health insurance for the disabled using variation in Medicaid expenditure across states.

The primary estimation technique (instrumental variables) leads to the conclusion that the rising value of Medicaid contributed greatly to the increase in the SSI rolls in the late 1980s and early 1990s. The instrumental variable estimates suggest that around one-quarter of the increase can be explained by this. In addition, the effects of Medicaid are much more important for the white population than the African-American population. The remainder of the paper is organized as follows. The next section provides some background on SSI and Medicaid and reviews the economic importance of Medicaid for other populations, followed by presentation of some theoretical considerations. Next, a descriptive analysis of the CPS data is presented. The regression results follow, and a final section explores policy implications.

INSTITUTIONAL BACKGROUND

Background on the SSI Adult Disabled and Medicaid Program

SSI was introduced in 1974, replacing state-run programs for the needy aged, blind, and disabled. In 1993, $23.5 billion was spent on SSI cash benefits for these groups. While the number of elderly and blind SSI participants remained stable, the number of disabled SSI participants increased from 2.9 million recipients in 1988 to 4.0 million recipients in 1992.

In addition to having limited income and assets, an adult between the ages of 18 and 64 must be disabled to qualify for SSI. For purposes of eligibility, disabled individuals are those "unable to engage in any substantial gainful activity by reason of a medically determined physical or mental impairment expected to result in death or that has lasted, or can be expected to last, for a continuous period of at least 12 months." While this definition may appear to be quite objective, eligibility standards, especially for mental impairments, have changed due to legislative, regulatory, and judicial action (U.S. General Accounting Office 1995).

Besides receiving a monthly cash supplement, Medicaid provides the disabled adult with a second valuable benefit from SSI participation. Each state's Medicaid program offers its own package of covered medical services within broad federal guidelines. Federal law requires states to offer eight mandatory services and allows them of offer thirty-one optional services.[2] Although only 15 percent of all Medicaid beneficiaries are disabled, they account for a much larger share of Medicaid costs. The average spending on disabled beneficiaries amounted to $7,717 per beneficiary in fiscal year 1993.[3] In contrast, average spending on nondisabled recipients was $2,233.

For disabled adults, there is little opportunity to receive public health insurance except by participating in SSI. A notable exception to this is section 1619 of the SSI law, which is intended to remove some of the work disincentives for the disabled. Section 1619(a) of the law provides continuation of cash benefits on the basis of disability even if earnings are at or above the "substantial gainful activity" level as long there is not a medical improvement in the disabling condition. Under section 1619(b), disabled individuals can continue to be eligible for Medicaid even if their earnings take them past the SSI breakeven point. These provisions turn out to be quite minor, however. In September 1992, just 48,000 of the 2.6 million disabled adults between the ages of 18 and 64 participated in either the 1619(a) or 1619(b) program (U.S. House of Representatives 1993).

Prior Studies of Medicaid and Welfare Participation

While the Medicaid program was introduced thirty years ago, and the program costs have been soaring, only recently has the program garnered much academic interest. The key obstacle in assessing Medicaid's impact on outcomes such as welfare participation has been that eligibility for Medicaid and cash benefits had been highly correlated. The reason that most of the recent academic interest on Medicaid has focused on its interaction with AFDC and not SSI is due to the belief that the behavioral elasticities of the blind, elderly, and disabled are extremely small.

Several studies have examined the impact of Medicaid on AFDC participation and work effort. While some of the earlier studies found that Medicaid had a surprisingly small effect on the AFDC and labor

market decisions of female-headed households, more recent work has found larger effects.

Blank (1989) exploits the fact that the average Medicaid expenditure differs tremendously across states.[4] She used data on 475 female-headed households from the 1980 National Medical Care Utilization and Expenditure Study (NMCUES). She finds that health problems significantly increased AFDC participation, but that program rules—such as the presence of the Medically Needy (MN) program or the value of Medicaid insurance coverage—had insignificant effects on AFDC usage. The effects on the MN program are not necessarily surprising because eight of the thirty MN states in her sample had a protected income level below the maximum AFDC payment level. More surprising was the robustness of the finding that the mean state-specific Medicaid insurance value did not affect AFDC participation.

Moffitt and Wolfe (1992) construct an individual-specific valuation of health insurance to surmount Medicaid's collinearity with AFDC eligibility and benefits levels. They note that a Medicaid variable that is constructed from a state-specific average may not proxy for the valuation of the Medicaid program by any particular family. They link 545 female-headed households from the 1984 Survey of Income and Program Participation to the 1980 NMCUES for health information to construct a "heterogeneity" index for Medicaid's value based on different health characteristics of the woman and her family. This index yields enormous variation in Medicaid: the total actuarial values range from $2.18 to $2,740 per individual, which is then combined across family members to get a family-specific value. Using this approach, they find sizable effects of Medicaid on labor market outcomes: if all workers were covered by private health insurance, AFDC participation would fall by 7.3 percentage points and the employment rate would rise by 16.0 percentage points.

Yelowitz (1995) examines expansions in Medicaid eligibility targeted toward young children between 1988 and 1991. These expansions linked Medicaid eligibility to the federal poverty line rather than a state's AFDC income eligibility limit, thus offering an incentive to leave welfare. He finds that these reforms significantly decreased AFDC participation and increased labor force participation. Among female-headed households, the effects were largest for divorced and separated women, and negligible for never-married women. Yelowitz

(1996b) examines recent changes in the Medicaid program on the SSI participation of the elderly. By using the implementation of a buy-in program for Medicare in the 1980s (which offered a substitute for the cost-sharing provisions of Medicaid), he finds that Medicaid has a bigger impact on exits from SSI for the elderly than the expansions targeted towards children had on exits from AFDC for female heads.

THEORETICAL CONSIDERATIONS

This section briefly explores how Medicaid may influence the SSI participation decision. The disabled individual maximizes a utility function, $U(C, L)$, which is a function of consumption goods (C) and leisure (L). The price of consumption goods (P_C) is normalized to \$1 per unit, while the price of leisure is simply the wage rate (W). He is given a time endowment (T) which he can allocate between work and leisure. He may also receive nonlabor income (N), for instance from the earnings of his spouse. Therefore his full budget constraint is defined as

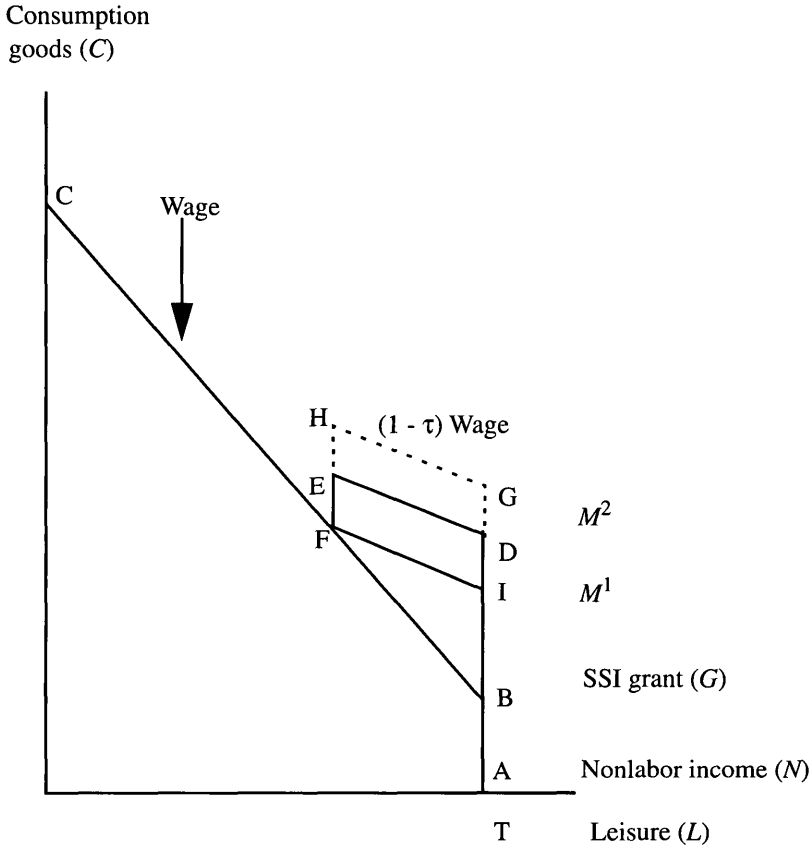
$$(1) \qquad P_C C + WL = WT + N.$$

In Figure 3.1, this is represented as the segment ABC. Given this budget constraint, the consumer maximizes his utility.

By introducing the SSI system into the model, the government essentially changes the budget constraint. The program offers a grant (G), which was \$669 per month for a married couple in 1994, and reduces this grant for earning income in the labor market. This reduction, known as the "benefit reduction rate" (τ), is 50 percent of earned income. Therefore the net wage falls to $(1 - \tau)W$ along the initial part of the budget constraint.

The final institutional feature to consider is incorporating Medicaid. Broadly speaking, Medicaid is received when the individual is on SSI and is lost in its entirety after leaving SSI. This discrete drop in benefits is known as the "Medicaid notch"—the design of the program creates a portion of the budget constraint where we would predict that no utility-maximizing person would choose. Consider an individual who lives in

Figure 3.1 Incorporating SSI and Medicaid into the Budget Constraint



a state where Medicaid is valued at some small amount, M^1—this can be thought of as the dollars the family would have to spend on medical expenses in the absence of insurance. His budget constraint now is represented by ADEFC in Figure 3.1. Consider a second individual who lives in a different state that has the same SSI grant but a more generous Medicaid program, so that $M^2 > M^1$. In this state, the budget constraint is represented by AGHFC.[5]

Given these different budget constraints, we can predict that the more valuable the Medicaid package, the higher the SSI participation rate. This arises for two reasons. First, increasing the value of Medicaid makes SSI more attractive to those who are ineligible based on their earnings. In this case, some people in this group may reduce their earnings in order to qualify. Second, increasing the value of Medicaid may encourage individuals who were previously eligible but not participating to join the program. In this case, the net benefit may not initially outweigh the stigma cost of participating, but it could after the value of Medicaid increases.

DESCRIPTIVE ANALYSIS

I use the 1988–1993 March Annual Demographic File, which provides retrospective information on family income, health insurance coverage, and program participation from 1987 to 1992 on the noninstitutionalized population. I choose to begin the analysis using the March 1988 CPS onward because several additional questions on health insurance coverage were added that make these later surveys less comparable to earlier ones.[6] I end the analysis with the March 1993 CPS because the last data on Medicaid average expenditure (the key independent variable) is for fiscal year 1992.[7]

Table 3.1 shows sequential selection criteria and the number of observations eliminated from each screen for each CPS year. I use about one-third of the roughly 900,000 observations contained in the 1988–1993 CPS years. The nine most important exclusions were being over the age of 64, being under the age of 18, living in Arizona, having imputed information on SSI or Medicaid receipt, having an imputed spouse number, being a woman under the age of 45, being a race other

Table 3.1 Sample Selection Criteria, Current Population Survey: March Annual Demographic File

	1988	1989	1990	1991	1992	1993
Initial number of observations	155,980	144,687	158,079	158,477	155,796	155,197
Over 64	18,610	17,740	18,902	19,043	18,954	19,074
Under 18	43,032	39,482	43,281	43,762	42,700	42,901
Lived in Arizona	1,091	1,045	1,078	1,057	993	974
Imputed disability status	287	280	367	291	274	414
Imputed SSI receipt	463	447	427	469	333	354
Imputed SSI value	74	78	86	91	103	96
Imputed Medicaid	1,188	1,067	1,208	1,378	1,429	1,504
Imputed veteran status	495	418	503	524	508	471
Imputed age	280	190	199	142	212	187
Imputed marital status	1,007	900	432	360	272	311
Imputed spouse number	1,212	1,606	2,309	2,223	969	902
Imputed sex	172	166	157	160	140	159
Imputed education	443	328	284	231	302	201
Imputed race	41	38	53	36	33	34
Women under age 45	31,077	28,520	31,789	31,693	31,323	30,611
AFDC participants	276	223	266	266	297	305
Not African American or white	1,952	1,820	2,148	2,290	2,381	2,624
Imputed wage/salary income	548	505	561	514	461	434
Imputed worker's comp income	112	93	106	141	114	95
Imputed veterans benefit	84	78	86	79	69	64
Imputed disability income	95	79	97	81	105	105
Female head with child present	1,164	1,045	1,222	1,234	1,244	1,254
Male head with child present	804	745	885	852	928	959
Related children in family	1,232	1,058	1,249	1,298	1,247	1,262
Final number of observations	50,241	46,736	50,384	50,262	50,405	49,902

than African American or white, living in a single-parent household, and having more related children than own children in a family.[8] The CPS is, perhaps, more useful than other household data sets because only a small fraction of the adult population participates in SSI-disabled.

Table 3.2 presents some summary statistics for the variables used in the analysis for the entire population, SSI recipients and SSI nonrecipients. Among the entire group, SSI participation is 1.15 percent over the time period, while Medicaid participation is nearly double that number, 2.24 percent. Even with the exclusions of single-parent households above, it is still possible that some families have access to Medicaid from alternative sources rather than through the SSI disabled program. Part of the gap between the two participation rates could result from the existence of the Medically Needy program or the General Assistance program. Among SSI recipients, more than 90 percent also receive Medicaid. There are at least two reasons why Medicaid participation may not be complete for SSI recipients. First, survey respondents might only report that they received Medicaid if they actually went to the hospital. Second, because a number of states require a second application for Medicaid, the respondent may not apply for benefits until they become sick. This table also shows that Medicare participation averages 28.2 percent for SSI recipients and 2.2 percent for nonrecipients. Since an SSI recipient is much more likely to participate in the disability insurance (DI) program than the average member of the population, a prolonged spell can result in Medicare coverage. A nonrecipient can also qualify for DI and thereby qualify for Medicare.

The next five variables in Table 3.2 represent state-level policy variables for the Medicaid and SSI program.[9] The average Medicaid expenditure for disabled SSI recipients is more than $2,000 higher than for elderly SSI recipients and more than $2,400 higher than for blind SSI recipients. The real Medicaid expenditure also exceeds the maximum annual SSI grant (which includes state supplements) by more than $800. There appear to be small differences in the average levels across SSI recipients and nonrecipients: nonrecipients appear to live in states with a higher Medicaid expenditure and substantially higher SSI grant. On the surface, these differences in average expenditure on Medicaid and average SSI benefits would suggest that higher benefits reduce participation. There are a variety of other factors, such as atti-

Table 3.2 Summary Statistics, 1987–1992

Variable name	Entire sample	Nonrecipients	SSI recipients
SSI participation	0.0115	0.0000	1.0000
Medicaid participation	0.0224	0.0121	0.9074
Medicare participation	0.0247	0.0217	0.2817
Average annual Medicaid benefit for disabled (1990 $)	$7,948 (3,662)	$7,952 (3,665)	$7,605 (3,361)
Average annual Medicaid benefit for blind (1990 $)	$5,529 (5,177)	$5,525 (5,168)	$5,890 (5,887)
Average annual Medicaid benefit for elderly (1990 $)	$5,936 (3,747)	$5,935 (3,744)	$6,015 (3,994)
Annual SSI benefit (1990 $)	$7,131 (2,130)	$7,146 (2,130)	$5,884 (1,747)
Section 209(b) state	0.2491	0.2490	0.2650
Respondent's age	42.20 (13.14)	42.13 (13.13)	47.91 (13.09)
African American	0.0763	0.0746	0.2231
Resides in central city	0.2122	0.2098	0.3268
Education < 9	0.0640	0.0608	0.3412
9 ≤ Education < 12	0.1013	0.0993	0.2275
Education = 12	0.3779	0.3792	0.2712
Currently married	0.6640	0.6690	0.2316
Number of own children under age 6	0.1932 (0.5249)	0.1950 (0.5270)	0.0357 (0.2406)
Number of own children aged 6 to 17	0.4222 (0.8296)	0.4256 (0.8318)	0.1244 (0.5209)
Male	0.7520	0.7543	0.5503
Veteran	0.2088	0.2104	0.0708
Private coverage	0.7601	0.7681	0.0794

NOTES: Author's tabulations of the March 1988–1993 Current Population Survey Annual Demographic File. Standard deviation in parentheses. Total number of observations is 297,930, of which 3,414 are SSI recipients.

tudes toward welfare participation, that also vary across states and are correlated with benefit levels.

Finally, Table 3.2 presents several demographic characteristics that are included in the regression analysis. On average, SSI recipients are older and less educated. They are also more likely to be single, have fewer children, and be female. Finally, there are large differences in the take-up (and presumably availability) of private insurance coverage. While less than one-tenth of SSI recipients had coverage, more than three-quarters of the nonrecipient sample had private coverage.

Table 3.3 illustrates trends in SSI participation from 1987 to 1992 for the entire sample and for several demographic groups. For the entire sample, the SSI participation rate increased steadily, from 0.98 percent in 1987 to 1.27 percent in 1992. Perhaps the most striking feature of this table is that the level of participation for the African-American population is more than three times as high as for the white population. The trend in participation, however, shows no consistent pattern—the participation rate falls from 3.07 percent in 1987 to 2.81 percent in 1989, and rises to 3.33 percent in 1992. The trend for whites is more clear: the SSI participation rate increased by more than one-third between 1987 and 1992, from 0.81 percent to 1.09 percent, despite varying economic conditions. The different trend foreshadow the different empirical findings for whites and African Americans in the regression analysis below.[10] Finally the table shows that SSI participation rate for adult women was more than 1 percentage point higher than the rate for men, though both groups show a similar increased trend in participation.

It is important to note that program participation in the CPS, as with many other household surveys, appears to be underreported. The national SSI participation rate in the adult population was 1.75 percent in 1992, compared to 1.27 percent in the CPS (U.S. House of Representatives 1993). While participation rates also appear to be consistently under-reported in most states, the discrepancies vary. The participation rate is underreported by 0.07 percentage points in Florida, by between 0.32 to 0.48 percentage points in Illinois, New York, and Texas, and by 0.95 percentage points in California. If the stigma of reporting program participation to a survey taker varies across states, then the patterns we see across states would be likely to emerge.

Table 3.3 Trends in SSI and Medicaid Participation over Time (%)

	Entire sample	African American	White	Men, 18–64	Men, 45–64	Women, 45–64
SSI						
1987	0.985 (0.044)	3.078 (0.280)	0.813 (0.041)	0.727 (0.043)	0.992 (0.091)	1.768 (0.118)
1988	1.067 (0.047)	3 846 (0.327)	0.845 (0.044)	0.777 (0.046)	1.080 (0.099)	1.958 (0.129)
1989	1.073 (0.045)	2.812 (0.265)	0.928 (0.044)	0 776 (0 045)	1.114 (0.096)	1.988 (0.125)
1990	1.155 (0.047)	3.559 (0.300)	0.959 (0.045)	0.813 (0.046)	0.956 (0.089)	2.201 (0.131)
1991	1.319 (0.050)	3.511 (0.293)	1.133 (0 049)	0 992 (0.050)	1.346 (0.105)	2.310 (0.134)
1992	1.268 (0.050)	3.346 (0.288)	1.093 (0.048)	0.942 (0.050)	1.178 (0.098)	2.225 (0.131)
Medicaid						
1987	1.966 (0.061)	5.972 (0.384)	1.638 (0.058)	1 706 (0.066)	1.907 (0.126)	2.756 (0.146)
1988	1.919 (0.063)	6.015 (0.404)	1.592 (0.060)	1.608 (0.067)	1.946 (0.133)	2.872 (0.155)
1989	2.070 (0.063)	5.830 (0.376)	1.756 (0.060)	1.715 (0.066)	2.220 (0.135)	3.160 (0.157)
1990	2.397 (0.068)	6.881 (0.411)	2.031 (0.065)	2.065 (0.073)	2.314 (0.138)	3.411 (0.163)
1991	2.495 (0.069)	6.234 (0.385)	2.179 (0.067)	2.177 (0.074)	2.288 (0.137)	3.461 (0.163)
1992	2.601 (0.071)	6.177 (0.386)	2.299 (0.069)	2.253 (0.076)	2.349 (0.137)	3.622 (0.166)

NOTE: Results from the March 1988–1993 Current Population Survey Standard errors in parentheses.

Table 3.4 illustrates trends in the average real SSI benefit level and real Medicaid expenditure from 1987 to 1992.[11] The average benefit level is computed from the CPS, based on the respondent's state of residence, time period, and marital status. Clearly, two different trends emerge here. Real SSI cash benefits remain largely unchanged. This may not be too surprising since the federal benefit level is indexed for inflation. Medicaid expenditure increased by more than $3,000 in real terms over this period. This pattern in Medicaid expenditure is similar to the pattern in overall SSI participation rates, and is at least suggestive that a link between the two trends may exist.

Table 3.4 Trends in SSI Benefits and Medicaid Expenditures

	Annual SSI benefit	Average Medicaid expenditure
1987	7,211	6,700
1988	7,074	6,482
1989	7,163	7,771
1990	7,090	8,308
1991	7,112	8,607
1992	7,133	9,730

NOTES; Results from the March 1988–1993 Current Population Survey All values are in 1990 dollars. Medicaid expenditures is deflated by the medical CPI.

REGRESSION RESULTS

Ordinary Least Squares (OLS) Estimates Using Average Medicaid Expenditure of Disabled

For ease of interpretation, I present results from a linear probability model. The coefficients from the models below therefore may be interpreted as percentage point changes. The basic estimating equation is denoted by

$$(2) \qquad \text{SSI\_PART}_i = \beta_0 + \beta_1 \text{MEDICAID\_BEN}_{jt} + \beta_2 \text{SSI\_BEN}_{jt} + \beta_3 X_t + \Sigma_j \delta_j S_j + \Sigma_t \delta_t T_t + \varepsilon_i.$$

The subscript i refers to individuals, j to states, and t to time periods. The outcome, SSI participation (SSI_PART) is a binary variable equal to 1 if the respondent participated in the program in the previous year. Two key policy variables that are expected to increase SSI participation are the average real Medicaid expenditure (MEDICAID_BEN) and the average real SSI benefit (SSI_BEN).[12] The vector X contains several individual-level variables that may also influence SSI participation, including the respondent's age and its square, race, residence in a central city, education, marital status, number of children present, gender, and veteran status.[13] In addition, I amend this basic specification to allow for nationally uniform, time-varying shocks to SSI participation through the inclusion of five time dummies, as well as time-invariant, state-specific shocks to SSI participation through the inclusion of forty-nine state dummies. The coefficients β_0, β_1, β_2, β_3, δ_j, and δ_t are to be estimated, and ε_i is an error term.

By including state-fixed effects (S_j) and time-fixed effects (T_t), the regression framework accounts for some of the other factors that may lead to an increase in SSI participation. I am able to control for the effects of the business cycle (at the national level) with the time dummies. Since other studies have demonstrated that this influences disability insurance applications, it may be reasonable to expect it to influence SSI participation. If changing economic conditions are correlated with Medicaid expenditure, the results will be biased by not accounting for this omitted variable.

Three other explanations for SSI growth, which essentially vary over time, are also controlled for. First, SSI spell lengths may have increased in duration because the Social Security Administration was performing fewer disability reviews. Second, some medical breakthroughs may have allowed disabled people to live longer than they otherwise would have (U.S. General Accounting Office 1995). Third, there has been growth over time in outreach efforts for SSI.

Several unmodeled or unobservable variables that differ across states could bias the results. As shown earlier, the SSI reporting behavior in the CPS data varies by state. If admitting program participation represents permanent differences in attitudes that vary by state, including state-fixed effects will account for this. In addition, the availability of Medicaid coverage varies across states, and this could affect SSI participation. For instance, a poor adult may be able to receive health

insurance coverage through the Medically Needy program or the General Assistance program. It is possible that these variables are correlated with Medicaid expenditure and affect SSI participation. For instance, more liberal states may have these optional programs, which would tend to discourage SSI participation, and have more generous Medicaid services, which would increase average Medicaid expenditure. This type of modeled difference across states would likely lead to the conclusion that increased Medicaid expenditure reduces SSI participation. To the extent that the MN and GA program remain fixed over the time period, this heterogeneity would be accounted for with state-fixed effects. It is plausible that the programs may have changed over time, however. Several states, including Michigan, eliminated their GA program in the early 1990s. If this program change is correlated with Medicaid expenditure, then even the model that includes state- and time-fixed effects will be biased. To account for these possibilities, I include four additional variables that vary over time at the state level: 1) the Medically Needy protected income level for one person, 2) measures of the state unemployment rate, 3) labor force participation, and 4) a measure of cuts in a state's General Assistance program.[14]

The results in the first column of Table 3.5 show that the OLS estimate of β_1 is statistically insignificant and economically unimportant. The point estimate suggests that increasing Medicaid by $1,000 leads to an increase in SSI participation of 0.005 percentage points. Since Table 3.4 illustrates that average Medicaid expenditure for the entire sample rose in real terms from $6,700 in 1987 to $9,730 in 1992, this coefficient estimate implies that increased Medicaid expenditure raised the probability of SSI participation by 0.015 percentage points. Since SSI participation for the whole sample increased from 0.98 to 1.27 percent (or 0.290 percentage points), the OLS estimate implies that rising health care costs can explain less than six percent (0.015 divided by 0.290) of the rise in SSI participation.

On the other hand, this model shows that increasing the SSI benefit increases SSI participation, though it is only marginally significant. Raising the benefit by $1,000 results in an increase in SSI participation of 0.053 percentage points. While this estimate could be an explanation for the rise in participation, Table 3.4 shows little change in cash benefits over time. The CPS estimates indicate that from 1987 to 1992, SSI benefits fell slightly in real terms from $7,211 to $7,133. While the

Table 3.5 Linear Probability Model from Full Current Population Survey Sample on SSI Participation

	(1) Ordinary least squares	(2) Instrumental variables
Medicaid benefit/10^6	0.0510	0.2453
	(0.0950)	(0.1536)
SSI benefit/10^6	0.5397	0.5284
	(0.3201)	(0.3201)
Section 209(b) state	0.0035	0.0038
	(0.0038)	(0.0038)
Per capita GA cut	–0.0002	–0.0002
	(0.0001)	(0.0001)
Unemployment rate/10^5	0.2737	0.1761
	(0.2321)	(0.2372)
Labor force participation/10^6	–0.0035	–0.0030
	(0.0012)	(0.0012)
Annual Medically Needy income limit/10^6	–0.0626	0.0159
	(0.6884)	(0.6396)
Respondent's age	0.0016	0.0016
	(0.0001)	(0.0001)
$Age^2/100$	–0.0012	–0 0012
	(0.0001)	(0.0001)
African American	0.0164	0.0164
	(0.0007)	(0.0007)
Resides in central city	0.0017	0.0018
	(0.0005)	(0.0005)
Education < 9	0 0520	0.0520
	(0.0008)	(0 0008)
9 ≤ Education < 12	0.0176	0.0176
	(0.0006)	(0.0006)
Education = 12	0.0032	0.0032
	(0.0004)	(0.0004)
Currently married	–0.0300	–0.0299
	(0.0010)	(0.0010)
Number of own children under age 6	0.0042	0 0042
	(0.0004)	(0.0004)
Number of own children aged 6 to 17	0.0001	0.0001
	(0.0002)	(0.0002)

Table 3.5 (continued)

	(1) Ordinary least squares	(2) Instrumental variables
Male	–0.0039	–0.0039
	(0.0005)	(0.0005)
Veteran	–0.0048	–0.0048
	(0.0005)	(0.0005)
Observations	297,930	297,930
Adjusted R^2	0 0363	0.0363

NOTES. Results from the March 1988–1993 Current Population Survey. Standard errors in parentheses All models also include state-fixed effects (49), time-fixed effects (5), and a constant term Instruments in column 2 are average Medicaid expenditures for the blind and elderly

cash benefits increase the probability of participation, they cannot explain the growth in participation. The table also shows the effect of a third policy variable, whether the respondent lived in a Section 209(b) state. Since very few states changed status from Section 209(b) to Section 1634 during the period, the effect of 209(b) status is essentially subsumed in the state-fixed effect. The estimate in this column is not significantly different from zero and economically small.

The labor market variables enter the model with the expected signs: increases in the unemployment rate raise SSI participation (though it is imprecisely estimated), while increasing labor force participation lowers SSI participation. Not surprisingly, the MN variable is imprecisely estimated: after controlling for state-fixed effects, there is little independent variation in the income limit. Contrary to expectations, the parameterization of the GA cut variable is "wrong-signed" and marginally significant. While larger GA cuts (indicating a larger positive value) should presumably increase SSI participation (and therefore enter into the model with a positive sign), instead the sign is negative.

Education and family structure appear to play important roles in SSI participation. Relative to those with a college degree, individuals with less than nine years of education are 5.2 percentage points more likely to participate in SSI, while those with less than twelve years are 1.8 percentage points more likely to participate. In addition, those who only completed high school are significantly more likely to participate

in the SSI disabled program than those who entered college, but the economic impact is not as dramatic as for the other educational groups. Being married lowers SSI participation by 3 percentage points, while having an additional young child increases the probability of participation. The positive effect of young children may indicate a "spillover" effect on SSI participation resulting from the Supreme Court's *Sullivan v. Zebley* decision. It is well known that the number of children on SSI skyrocketed during this time frame, and once a household enrolled one member on SSI, its propensity to enroll other members may increase.

The signs of the other demographic and location-specific characteristics enter into SSI participation largely as expected. SSI participation increases with age, but at a decreasing rate. Since many physical disabilities may not occur until later ages, this finding makes sense. Relative to whites, being African American raises the probability of SSI participation by 1.64 percentage points. This is consistent with the continually higher levels of participation in Table 3.3. Living in a central city raises SSI participation. This may occur for two reasons. First, those in central cities may have more access to welfare and social security offices or health care facilities, which lowers the transaction costs of SSI participation and raises the value of Medicaid, respectively. Second, if living in a central city means that individuals have better information about the programs, they would be more likely to participate. Finally, being male or being a veteran significantly lowers SSI participation.

Instrumental Variables (IV) Estimates Using Average Medicaid Expenditure of Elderly and Blind as Instruments

The prior estimates using variation in disabled expenditure may be biased if changes in the underlying health of the SSI population affected both Medicaid's value and SSI participation. If the eligibility criteria for disability becomes less strict, for example, so that people who were previously found to be ineligible are now deemed eligible for SSI, then the former estimates of β_1 would be too small. In the Supreme Court's *Sullivan v. Zebley* decision, such a reevaluation occurred for children, and this may have had spillovers into the adult population.[15] In addition, if states attempted to shift their GA and MN beneficiaries onto the SSI rolls, and if these groups happened to be

healthier, the OLS results would be biased. In this case, the marginal disabled SSI recipient will likely incur less health care expenditure than the average recipient, so that average expenditure falls while SSI participation increases. This would lead to a spurious negative correlation (which in turn biases the coefficient downward).[16]

To correct for this simultaneity bias, I instrument for average Medicaid expenditure of the disabled in each state-year cell with the corresponding average expenditure of the elderly and of the blind. These variables reflect different aspects of the state's Medicaid program that influence its value, such as variation in health care prices, access to care, and scope of services. Since the criteria to qualify as a blind or elderly recipient is more objective, these instruments are unlikely to be correlated with changing definitions of disability.[17]

At this point, it is important to discuss the validity of the instrumental variables. Expenditure for neither the blind nor elderly fully captures the breadth of a state's Medicaid program—the blind tend to be healthy, and the differences in elderly expenditure may reflect differences in nursing home access. This does not invalidate the estimation technique, however. Two conditions must hold: the instruments must be correlated with the endogenous regressor and uncorrelated with the error term. While the expenditure on the elderly and blind is not perfectly correlated with expenditure on the disabled, they are extremely powerful instruments—the first stage F-statistic (predicting Medicaid expenditure for the disabled) is over 10,000. In any case, if the instruments were weak predictors, the instrumental variable estimates would be biased toward the OLS estimates so I would be unlikely to find any effect of Medicaid.

By instrumenting, the coefficient estimate in the second column of Table 3.5 increases dramatically, consistent with changing the budget constraint in Figure 3.1. Increasing Medicaid expenditure by $1,000 is now associated with an increase in the probability of SSI participation by 0.024 percentage points. Again, taking the rise in Medicaid expenditure from Table 3.4, this estimate implies that rising health care costs from 1987 to 1992 raised the probability of participation by 0.070 percentage points. Since the total increase in SSI participation was 0.290 percentage points, the point estimate indicates that rising health care costs can explain around one-quarter of the rise in SSI participation. The point estimates on the other explanatory variables remain largely

unchanged, both in significance and in magnitude. By comparing the coefficient estimates on Medicaid expenditure and SSI benefit levels, a $1,000 increase in SSI leads to a similar rise in participation as a $2,170 increase in Medicaid expenditure.

Recall that Table 3.3 showed dramatic differences in SSI participation rates across racial lines. This may suggest that rising health care costs have different effects on the African-American and white populations. The two columns in Table 3.6 divide the sample into whites and African Americans, respectively. Again, I instrument for average disabled Medicaid expenditure with average blind and average elderly Medicaid expenditure in each state-time cell.

The Medicaid coefficient estimates for the white population are slightly larger than the IV estimates from the second column of Table 3.5. The effect of Medicaid expenditure increases slightly, and the coefficient is more precisely estimated than in the full sample. Cash benefits appear to play a less important role in SSI participation than for the full sample. In contrast, Medicaid appears to play little role in the SSI participation decision of African Americans, though the coefficient is imprecisely estimated. While the policy variables explain little of the SSI participation decision for African Americans, the demographic variables on education, family structure, gender, and veteran status are all significant predictors of participation.

CONCLUSIONS AND EXTENSIONS

This chapter finds that rising health insurance costs are an important reason for participation in the SSI-disabled program. By using a large, nationally representative household data set, I find that around one-quarter of the rise in SSI participation may be due to increases in the value of Medicaid. The effects appear to be concentrated in the white population, not the African-American population.

I show that ordinary least squares estimates of Medicaid effect produce badly biased estimates, since the health status of the disabled population was changing. The estimates using instrumental variables produce much stronger positive effects of Medicaid on SSI participation. Is it reasonable to assume that the health status of the disabled

Table 3.6 Differences in Medicaid's Impact Based on Race

	(1) White	(2) African American
Medicaid benefit/10^6	0.2828	0 2118
	(0.1421)	(1.6752)
SSI benefit/10^6	0.3014	1.4481
	(0.3043)	(2.3016)
Section 209(b) state	0.0041	0.0432
	(0.0035)	(0.1305)
Per capita GA cut	–0.0001	–0.0007
	(0.0001)	(0.0007)
Unemployment rate/10^5	0 1695	3.0078
	(0.2256)	(16.5125)
Labor force participation/10^6	–0 0014	–0.0241
	(0.0012)	(0.0093)
Annual Medically Needy income limit/10^6	0.5453	–5.6620
	(0.6200)	(3.4722)
Respondent's age	0.0016	–0.0003
	(0.0001)	(0.0006)
Age^2/100	–0.0014	0.0017
	(0.0001)	(0.0007)
Resides in central city	0.0014	0.0037
	(0.0005)	(0.0027)
Education < 9	0.0475	0.0944
	(0.0008)	(0.0048)
9 ≤ Education < 12	0.0159	0.0323
	(0.0006)	(0.0035)
Education = 12	0.0030	0.0095
	(0.0004)	(0 0027)
Currently married	–0.0265	–0.0546
	(0.0010)	(0.0067)
Number of own children under age 6	0.0032	0.0132
	(0.0003)	(0.0026)
Number of own children aged 6 to 17	0.0000	0.0022
	(0.0002)	(0.0015)
Male	–0.0024	–0.0248
	(0.0005)	(0.0035)

Table 3.6 (continued)

	(1) White	(2) African American
Veteran	–0.0043	–0.0073
	(0.0005)	(0.0032)
Observations	275,187	22,743
Adjusted R^2	0.0303	0.0591

NOTES: Results from the March 1988–1993 Current Population Survey Standard errors in parentheses. In addition to the coefficients shown, all models also include state-fixed effects (49), time-fixed effects (5), and a constant term. Instruments in columns 1 and 2 are average Medicaid expenditures for the blind and elderly.

changed so dramatically while the health status of elderly and blind did not? Knowing the answer to this question is vital for assessing the validity of the instruments. It is difficult to believe that the health status of the blind changed dramatically from 1987 to 1992, and the instrumental variables results do not change markedly by only using the Medicaid expenditure for the blind as an instrument. On the other hand, it is possible the health status of the elderly on SSI may have changed because the Qualified Medicaid Beneficiary (QMB) program in the 1980s and 1990s offered an incentive for the elderly to leave SSI and still retain Medicaid. Around 1.4 million elderly were enrolled in this program in December 1992; however it is not known whether the health status of former SSI recipients who left and enrolled in the QMB program was better or worse than the average SSI recipient.

Are the estimated effects too large? At this point, it is important to remember about the recent empirical findings on other Medicaid populations. In other work, Yelowitz (1995,1996b) finds significant effects on AFDC participation for female household heads and on SSI participation for elderly households. In those studies, the policy experiment was somewhat different from this study, however. The policy changes for young children and for the elderly offered Medicaid benefits without necessarily applying for AFDC or SSI, which therefore offered incentives to leave those welfare programs. In a closer comparison to this study, Moffitt and Wolfe (1992) attempt to value Medicaid and find strong effects on AFDC participation for female-headed households. It is plausible to think that health insurance plays a more important role in the economic decision making of disabled adults than either female

household heads or elderly households. Therefore, the stronger results here appear reasonable.

The findings have several policy implications for program design. Since Medicaid is an important determinant of SSI participation, offering health insurance without the need to participate in SSI may reduce total costs. This could occur because disabled adults may then forego the cash benefits from SSI—which amounts to more than $20 billion annually. On the other hand, some disabled adults who were not previously participating in SSI, because the program may be stigmatizing, may decide to participate in a Medicaid-only program, which could increase costs. In theory, this could occur through the Medically Needy program. The program typically has lower income limits than SSI and fewer covered services under Medicaid than for categorically needy recipients. Thus, Medically Needy may not offer enough of an incentive for the disabled to leave. Therefore modifications of existing SSI program rules concerning Medicaid may have an impact on total costs.

Notes

1. See Yelowitz (1995, 1996b) for explanations of the Medicaid reforms for children and the elderly, respectively.
2. Required coverage includes inpatient and outpatient hospital services, rural health clinic services, federally qualified health center services, laboratory and x-ray services, nursing facility services for individuals under age 21, family planning services, physicians' services, home health services for any individual entitled to nursing facility care, nurse-midwife services, and services of certified nurse practitioners.
3. These expenditure numbers include spending on intermediate care facilities and skilled nursing homes. I believe that it is important to include these numbers because access to these facilities is indeed part of Medicaid's value. While it is certainly true that only a small portion of the population will be institutionalized, it is also true that a small portion will use any particular Medicaid service. Therefore excluding this expenditure seems ad hoc.
4. Winkler (1991) takes a similar approach.
5. It is not necessarily clear that an increase in Medicaid spending per beneficiary translates into an increase in the value to individuals, however. For example, as real payments to doctors or other service providers increase, the individual getting the same service at higher cost may not have greater value. It is much more difficult to obtain a family- or individual-level valuation, although other studies, such as Moffitt and Wolfe (1992) have tried.

6. These questions specifically dealt with the health insurance status of children in the household. Survey respondents were effectively asked twice about the health insurance coverage of children in the household.
7. Furthermore, I restrict my attention to adults who would be unlikely to collect Medicaid from a program other than SSI. Thus, I exclude single-parent households with children under age 18 (who may be eligible for Medicaid under the Aid to Families with Dependent Children, or AFDC, program). I also eliminate women between 18 and 44 from my sample. For this group, the primary health insurance expense would be due to pregnancy, and other reforms in the Medicaid program from 1984 onward could bias the results for SSI participation. To accurately examine the impact of Medicaid for these groups, not only would the expansions need to be parameterized, but the joint AFDC, SSI, and labor force participation decisions would have to be modeled, which is beyond the scope of the current paper. See Currie and Gruber (1994) for an analysis of these Medicaid pregnancy expansions.
8. I follow Winkler (1991) in excluding Arizona from the analysis. Arizona had a Medicaid demonstration project for part of the time period I examine, and data on average Medicaid expenditure are not available.
9. All of these variables were obtained from various editions of U.S. House of Representatives (1993).
10. Although the difference for African Americans is striking, it is not all that surprising for a means-tested program.
11. These are deflated using the CPI-U for the SSI benefit level and the medical services CPI for Medicaid.
12. I include a third state-specific variable, whether or not the respondent lived in a section 209(b) state. Several states changed status between section 209(b) and section 1634 between 1987 and 1992, but in models with state-fixed effects, this effect is never reliably estimated. I would expect the coefficient to be negative—living in a state with extra application procedures for Medicaid increases transaction costs and thus lowers SSI participation.
13. I include many of the same demographic variables that Winkler (1991) includes in her AFDC participation equation using the CPS. In addition, I tried restricting the sample to adults aged 22 to 64 since some rules which govern the SSI eligibility for a child who reaches the ages of 18 to 21 have changed over time. The results on the Medicaid and SSI variables are similar to the coefficients reported here.
14. These variables are carefully explained in Stapleton et al. (Chapter 2). It is possible that the inclusion of the labor market and General Assistance variables reflect outcomes of the same utility maximization process that lead to SSI participation, since these are constructed from participation rates rather than changes in the budget constraint. However, it is more likely that they are instead driven by changes in the business cycle, so that they are not endogenous, at least at the person-level.
15. The Supreme Court ruled that disability standards for children may not be narrower than those applied for adults. As a result, eligibility criteria for children are based on a child's developmental delay and limitations on the child's ability to engage in age-appropriate activities of daily living. This has increased the number

of children classified as disabled. Prior to 1990, the same disability criteria that applied to adults were also applied to children.

16. This argument suggests growth in SSI-disabled expenditure should be slower than other groups who use similar Medicaid services, for whom the health mix was not changing. My calculations show average expenditure on the disabled grew 41 percent in real terms from 1987 to 1993. The growth rates for the blind and elderly were much greater, 77 and 144 percent, respectively.
17. An aged person age 65 and over with limited income and resources can qualify under the aged SSI program, while blind individuals are defined as those with 20/200 vision or less with the use of a correcting lens in their better eye, or those with tunnel vision of 20 degrees or less.

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Comments on Chapter 3

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I like the paper by Aaron Yelowitz (Chapter 3) and believe its general finding that Medicaid is a significant factor in explaining the recent growth in numbers of adult Supplemental Security Income (SSI) recipients. We know that Medicaid has been growing—from 22.9 million recipients ($48.7 billion expenditures) in 1988 to 35.1 million recipients ($107.9 billion expenditures) in 1994. Medical expenditures have increased tremendously over the period studied, and an existing body of literature on other population groups finds similar results: that publicly provided health insurance is an important determinant of individual choices concerning both age of retirement and applications for Aid to Families with Dependent Children.

The theoretical framework is one established in the literature and makes sense as applied here. It is a choice-based, utility-maximization model in which the provision of Medicaid (an either/or or a 0/1 choice, the so-called Medicaid notch) is incorporated into an individual's *choice*, selecting the option that maximizes well-being. Well-being is proxied by potential income (including the value of benefits in-kind) in each of the two options, SSI with Medicaid versus working. Health is not fully incorporated into the model; Yelowitz discusses the need to incorporate health into his model, but at the moment, well-being under the work option depends only on earnings for each individual. Health limitations are not incorporated, and although Yelowitz mentions this omission, he never discusses how it might influence the model. For consistency, he needs to incorporate the probability of being offered private insurance and a value for it if it is offered by an employer.

One further comment on the model is that most states have a spend-down provision that allows certain persons to obtain Medicaid without being on SSI, and many states offer medical care coverage through another program, General Assistance (GA). Hence, a number of persons are potentially eligible for Medicaid or GA, and the probability of

eligibility and the speed by which they could be found eligible are also factors to be considered. These factors are not incorporated into the model.

In regard to the data and empirical work, most of the exclusions seem reasonable, except perhaps for those eliminated because they have imputed information—but this is a problem that plagues all of us doing empirical research. In this case such exclusion seems quite minor and pertains to a very small proportion of the observations.

There are a few puzzles in the data.

1. The author reports Medicaid expenditures for disabled persons that are too high according to official figures in *Health United States, 1995*. In these official statistics, average spending in 1993 was $7,706, compared to Yelowitz's reported value of $9,226. The author states that his figure includes nursing home expenditures (see note 3 in Chapter 3), but so do the official statistics as reported in Table 139 in *Health United States, 1995*, which are based on Health Care Financing Administration data. A similar issue arises with the data used for Medicaid in the study. Why these differences?

2. It would be meaningful to see a comparison of the insurance coverage in a matched sample according to education, age, and marital status. I do not think that a comparison to the total U.S. population is very informative.

Many of the results seem plausible. A few raise questions about the reasonableness of the estimation. Perhaps the most puzzling involves the dummy variable included as an indicator of 209(b) states, which are more stringent with regard to Medicaid eligibility: not all persons eligible for SSI are eligible for Medicaid. This leads to an expected negative sign on the variable for a 209(b) state, yet the result is positive, though not significant. The other puzzle is why the number of children should be positive when there are no dependent benefits associated with SSI and, hence, no additional benefit to families with children. The author's explanation of a link to the *Zebley* case seems inadequate (unlikely) as an explanation.

Yelowitz appropriately raises the issue of endogeneity of the value of Medicaid. His argument is that if the benefits become more gener-

ous, an increased number of marginal persons (i.e., those who tend to be healthier and use less medical care) will be attracted to SSI and Medicaid. This means that as more people join the ranks of those on these programs, the expected benefit, at least as measured in this study, will fall. This fall will not reflect *decreases* in program generosity, but rather *increased* generosity. Because of this potential problem, instrumental variables are used in the next set of estimates. But the choice of instruments is not compelling, in the following ways.

Expenditures on the blind and the elderly are used as instruments. According to the statistical test reported, they work well. Yet at least on an intuitive basis, neither of these groups seems able to fully measure the breadth of a state's Medicaid program. Blind persons tend to be healthy, so their medical expenditures will not reflect the scope of a state's Medicaid program. And differences in expenditures of the aged across states are likely to reflect differences in nursing home access rather than in breadth of acute and chronic coverage. Preferable instruments would seem to be expenditures by disease category. This would require background information on the basis for a disability determination, which is not available in Current Population Survey data. One suggestion, drawing on an alternative data set, is to identify groups by expected expenditures—grouping, for example, into the following four categories: low cost, low technology, high technology, and experimental and related groups. This also suggests that using SIPP data may be preferable, although the time span would be shorter.

Finally, other factors that may or may not be fully taken into account may help explain the growth in SSI and Medicaid enrollment among adults.

- Reduced coverage of private insurance over this same time period, resulting in more co-payments and less coverage for other family members. This could explain some of the growth in SSI and Medicaid spending.
- Poor health, which reduces potential wages. This is also part of the utility-maximization framework and should be incorporated into the model.
- The increase in the number of AIDS cases. Many of these people are covered by SSI and Medicaid; $55 million was spent on AIDS in 1989, $280 million in 1992 and $500 million in 1994. The

number of persons covered for AIDS differs substantially across states.

- There may also have been significant changes in the treatment and diagnosis of many illnesses over this period, which would also influence expenditures over time.
- Some drug addicts and alcoholics have become recipients of SSI and Medicaid during this period, and 75 percent of these persons are in two states—California and Illinois. If their use of medical care differs significantly from that of traditional recipients, the means of these states would be influenced by these persons in ways that would not represent *true* differences in the expected value of Medicaid across the states.

This type of research could be improved through the use of data sets, such as the Survey of Income and Program Participation, with more information on health conditions, as well as through the use of a new data set—the supplement to the National Health Interview Survey, which oversamples and resamples persons with disabilities. Use of such data may allow some additional work on how to create better groupings by diagnosis to predict the value of Medicaid, in particular to test whether those requiring greater expenditures are more likely to apply.

Given the available data, this author has done a good job of exploring the role of Medicaid in explaining the recent growth of SSI. The chapter provides evidence to convince us that Medicaid is an important factor in accounting for that growth.